

## Patent Claims

1. A method for generating calibration signals for calibrating spatially remote signal branches of antenna systems comprising:

generating a base signal by means of a timer;

feeding said base signal to a distributor unit, said distributor unit distributing said base signal to amplifier circuits on signal distribution lines respectively allocated to said amplifier circuits;

generating said calibration signals at outputs of said amplifier circuits by amplifying said base signal within a specifiable upper amplitude limit and a specifiable lower amplitude limit; and

feeding said calibration signals to the respective feed-in points of said signal branches allocated to said amplifier circuits.

2. The method of claim 1, wherein said each of said amplifier circuits comprises a calibration line switch that is connected directly before an output amplifier, wherein said calibration line switch is switchable between a passage state and a signal-reflecting state, and, in said signal-reflecting state, a signal transit time of said base signal is measured on said signal distribution lines with an evaluation unit, wherein said evaluation unit is connected to a resistance matrix, and wherein said resistance matrix is connected to the respective signal distribution line between said amplifier circuit and said distributor unit.

3. The method of claim 2, wherein one or more additional amplifiers are connected upstream in series from said output amplifier for improving edge steepness of said calibration signal.

4. The method of claim 3, wherein a high frequency bandwidth of said one or more additional amplifiers connected upstream is smaller or equal in relation to said output amplifier.

5. The method of claim 1, wherein said base signal is a pulse burst that is generated in a J/K flip-flop as a timer, so that said generated pulses have a same frequency, pulse width and pulse duty factor.

6. The method of claim 2, further comprising:  
generating a low signal for ascertaining said lower amplitude limit, wherein said low signal is conducted through said distributor unit and said signal distribution lines to said amplifier circuits, wherein an output voltage for said low signal is measured at said outputs of said amplifier circuits, and wherein said calibration lead switches of said amplifier circuits are connected in passage.

7. The method of claim 2, further comprising:  
generating a high signal for ascertaining said upper amplitude limit, wherein

said high signal is conducted through said distributor unit and said signal distribution lines to said amplifier circuits, wherein an output voltage for said high signal is measured at said outputs of said amplifier circuits, and wherein said calibration line switches are connected in passage.

8. The method of claim 6, wherein a frequency-dependent output performance of said base signal is calculated at said output of each of said amplifier circuits as follows:

$$P_{\text{Output}} = 10 * \log \left[ \left[ \frac{2 * (U_{\text{High}} - U_{\text{Low}})}{\pi * \sqrt{2}} \right]^2 \right] / \text{IMP}$$

with  $U_{\text{high}}$ : Output voltage of said upper amplitude limit  
 $U_{\text{Low}}$ : Output voltage of said lower amplitude limit  
IMP: Impedance of said signal distribution lines in Ohms.

9. The method of claim 7, wherein a frequency-dependent output performance of said base signal is calculated at said output of each of said amplifier circuits as follows:

$$P_{\text{Output}} = 10 * \log \left[ \left[ \frac{2 * (U_{\text{High}} - U_{\text{Low}})}{\pi * \sqrt{2}} \right]^2 \right] / \text{IMP}$$

with  $U_{\text{high}}$ : Output voltage of said upper amplitude limit  
 $U_{\text{Low}}$ : Output voltage of said lower amplitude limit  
IMP: Impedance of said signal distribution lines in Ohms.

10. The method of claim 8, wherein an amplitude of a signal in each of said a signal branches is measured as follows:

switching said calibration line switch of said corresponding amplifier circuit to passage;

conducting said base signal over said corresponding amplifier circuit and said signal branch to be calibrated;

measuring an output of a corresponding signal on an evaluation unit connected to an output of said signal branch to be calibrated;

determining a ratio of said output amplifier of said amplifier circuit and an output ascertained at said output of said signal branch.

11. The method of claim 9, wherein an amplitude of a signal in each of said a signal branches is measured as follows:

switching said calibration line switch of said corresponding amplifier circuit to passage;

conducting said base signal over said corresponding amplifier circuit and said signal branch to be calibrated;

measuring an output of a corresponding signal on an evaluation unit connected to an output of said signal branch to be calibrated;

determining a ratio of said output amplifier of said amplifier circuit and an output ascertained at said output of said signal branch.

12. The method of claim 10, wherein an intrinsic transit time of a signal between said distributor unit and one of said amplifier circuits is measured as follows:

switching said calibration line switch of said amplifier circuit to be gauged into a signal-reflecting state;

conducting said base signal over said distributor unit simultaneously to said evaluation unit that is connected to said resistance matrix and through said signal distribution line to said amplifier circuit, wherein said resistance matrix forwards a signal reflected from said calibration line switch to said evaluation unit;

measuring a transit time difference of both signals received in said evaluation unit, which corresponds to double a transit time between said distributor unit and the calibration line switch.

13. The method of claim 11, wherein an intrinsic transit time of a signal between said distributor unit and one of said amplifier circuits is measured as follows:

switching said calibration line switch of said amplifier circuit to be gauged into a signal-reflecting state;

conducting said base signal over said distributor unit simultaneously to said evaluation unit that is connected to said resistance matrix and through said signal distribution line to said amplifier circuit, wherein said resistance matrix forwards a signal reflected from said calibration line switch to said evaluation unit;

measuring a transit time difference of both signals received in said evaluation unit, which corresponds to double a transit time between said distributor unit and the calibration line switch.

14. The method of claim 12, wherein the transit time of a signal in the signal branch to be calibrated is measured as follows:

switching said calibration line switch of said corresponding amplifier circuit to passage;

conducting said base signal through said distributor unit simultaneously to said evaluation unit and through signal distribution lines and the amplifier circuit to the feed-in point of said signal branch to be calibrated, wherein an output of said signal branch to be calibrated is connected to said evaluation unit; and

measuring a transit time difference between both signals received in said evaluation unit, wherein the transit time of the signal in the corresponding signal branch corresponds to the temporal difference between the input time of the base signal from the resistance matrix at the evaluation unit and the input time of the calibration signal by the signal branch to be calibrated, minus the intrinsic transit time between the distributor unit and the calibration switch.

15. The method of claim 13, wherein the transit time of a signal in the signal branch to be calibrated is measured as follows:

switching said calibration line switch of said corresponding amplifier circuit

to passage;

conducting said base signal through said distributor unit simultaneously to said evaluation unit and through signal distribution lines and the amplifier circuit to the feed-in point of said signal branch to be calibrated, wherein an output of said signal branch to be calibrated is connected to said evaluation unit; and

measuring a transit time difference between both signals received in said evaluation unit, wherein the transit time of the signal in the corresponding signal branch corresponds to the temporal difference between the input time of the base signal from the resistance matrix at the evaluation unit and the input time of the calibration signal by the signal branch to be calibrated, minus the intrinsic transit time between the distributor unit and the calibration switch.